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April 1st, 2010
Renesas Electronics Corporation

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User's Manual

PCA7477G-100
PCA7477G-160

User's Manual

PROM Programming Adapters for M37760FFAGP/M37760FFAGP-160

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www.renesas.com

Rev.1.00 2003.07

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Chapter 1. Things to Check When Unpacking

This product consists of the following parts listed in Table 1.1. When unpacking, check to see that it contains all of the components shown in Table 1.1 below.

Table 1.1 Package components

Main unit	PCA7477G-100 or PCA7477G-160
Interface unit	PCA7477B
Connector	PCA4738E (32-pin)
User's manual	This manual

Chapter 2. Introduction

The PCA7477G-100 is a PROM programming adapter for 7760 Group 100-pin QFP (100P6P-E) and the PCA7477G-160 is a PROM programming adapter for 7760 Group 160-pin QFP (160P6-C). The adapter is a tool that can be used to write programs into an internal PROM of MCUs using a commercially available PROM programmer.

Figure 2.1 shows the external view of the PCA7477G-100/PCA7477G-160 and its constituent parts.

Applicable MCU: M37760FFAGP (PCA7477G-100)
M37760FFAGP-160 (PCA-7477G-160)

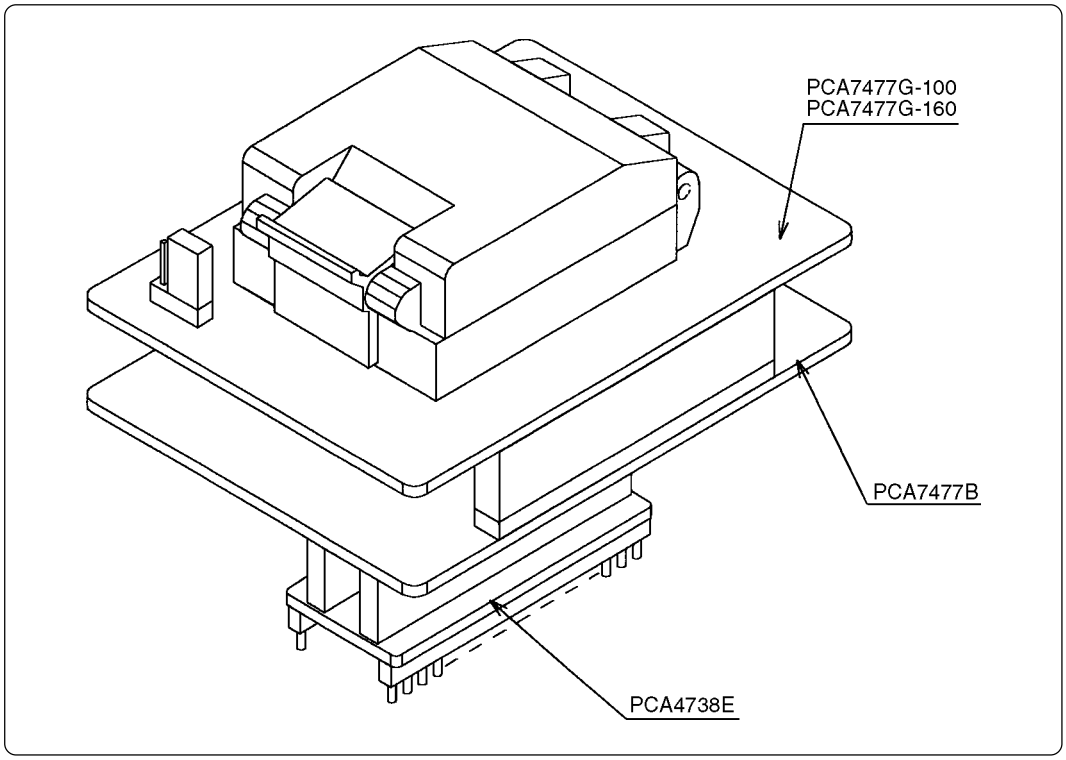

Figure 2.1 External view of the adapter and its constituent parts

Chapter 3. Specifications

Tables 3.1 and 3.2 list specifications of the PCA7477G-100 and PCA7477G-160.

Table 3.1 Specifications of the PCA7477G-100

Applicable MCU		M37760FFAGP
Operating clock frequency		8 MHz (Supplied by the ceramic oscillator mounted on the PCA7477G-100)
Power supply		Supplied from Vcc of the PROM programmer
Board configuration	PCA7477G-100	Board to insert a programmable MCU (IC socket for 100-pin QFP mounted on it)
	PCA7477B	Interface board (Connected by two rows of standard-pitch 18-pin connectors and two rows of standard-pitch 16-pin connectors to the upper and lower boards)
	PCA4738E	Board to connect to the PROM programmer (Standard-pitch 32-pin pin-header mounted)

Table 3.2 Specifications of the PCA7477G-160

Applicable MCU		M37760FFAGP-160
Operating clock frequency		8 MHz (Supplied by the ceramic oscillator mounted on the PCA7477G-160)
Power supply		Supplied from Vcc of the PROM programmer
Board configuration	PCA7477G-160	Board to insert a programmable MCU (IC socket for 160-pin QFP mounted on it)
	PCA7477B	Interface board (Connected by two rows of standard-pitch 18-pin connectors and two rows of standard-pitch 16-pin connectors to the upper and lower boards)
	PCA4738E	Board to connect to the PROM programmer (Standard-pitch 32-pin pin-header mounted)

Chapter 4. How to Set the PCA7477G-100/PCA7477G-160

4.1 Attaching the Adapter to a PROM Programmer

Attach the pin No. 1 of the PCA4738E connector (standard-pitch 32-pin pin-header mounted) to the pin No. 1 of the PROM programmer's socket.

Be careful when attaching the adapter because incorrect insertion can cause fatal damage to the MCU.

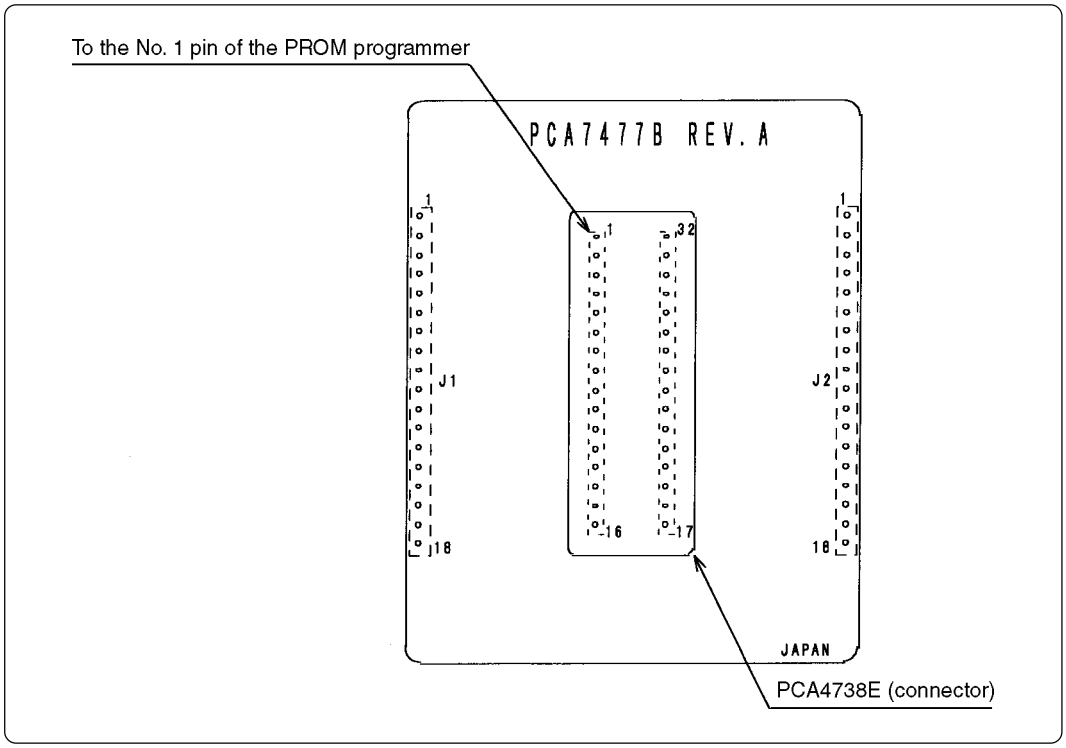

Figure 4.1 Attaching the adapter to a PROM programmer

4.2 Mounting an MCU into the Adapter

As shown in Figure 4.2, insert the No. 1 pin of an MCU into the No. 1 pin of the IC socket on the PCA7477G-100. It is same for the PCA7477G-160.

Be careful when inserting the MCU because incorrect insertion can cause fatal damage to the MCU.

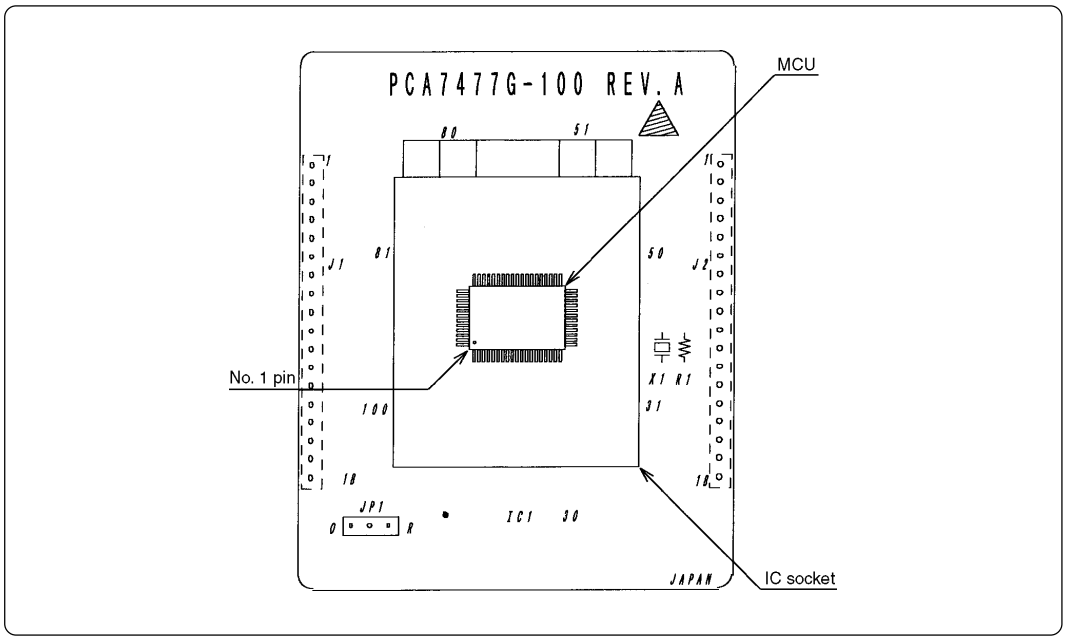

Figure 4.2 Mounting an MCU

4.3 Precautions When Opening and Closing the IC Socket

When opening and closing the IC socket, hold the adapter horizontally as shown in Figure 4.3. Otherwise the inside of the IC socket may become damaged and cause an electrical insulation failure.

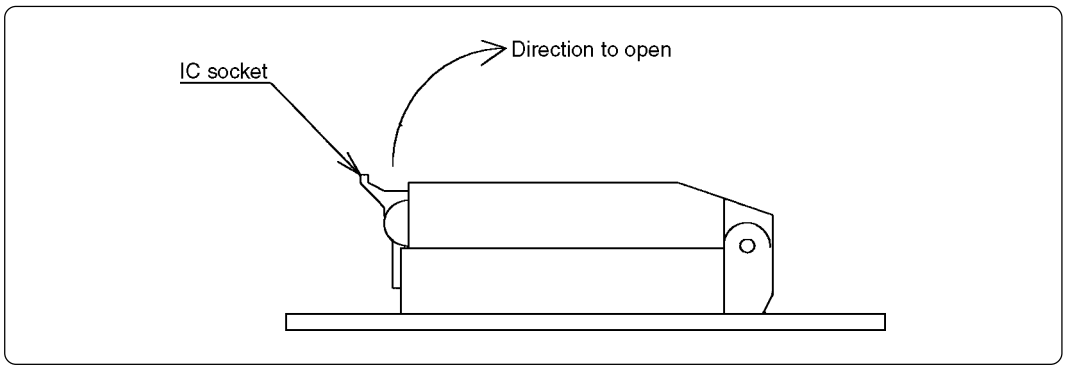

Figure 4.3 Opening the IC Socket

4.4 Precautions When Handling the Adapter

Do not directly touch the connector in the IC socket and the pins on the PROM programmer connector because dirt may cause an electrical insulation failure.

Chapter 5. How to Operate the PROM Programmer

For how to operate the PROM programmer (e.g. setting ROM type, transferring a program, setting areas), refer to its user's manual.

5.1 Recommended PROM Programmers

The PROM programmers listed in Table 5.1 are recommended for the PCA7477G-100/PCA7477G-160. Using the actual products, we have verified that these PROM programmers can be used to write programs without problem. Nonconformity occurring by using any other PROM programmers can not be supported. For the latest type of PROM programmers, contact the manufacturer to confirm whether it can be used for your product.

Table 5.1 Recommended PROM programmers

Manufacturer	Type name	Device	Programming voltage (V_{PP})
Advantest Corporation	R4944A	M5M28F101 mode	12.0 V
	R4945		
	R4945A		

5.2 Setting the Jumper Switch

To write the program into the internal ROM area (02000h--1FFFFh) of the MCU, set the JP1 to R side (see Figure 5.1).

To write the program into the OSD ROM area (20000h--227FFh) of the MCU, set the JP1 to O side (see Figure 5.1).

Figure 5.1 Setting JP1

Note: ▭ shows the part DIC mounted

5.3 Programming Procedure

Follow the procedures below to write the program into the MCU.

(1) Mount the MCU into the adapter PCA7477G-100/PCA7477G-160.

(2) According to the ROM type, set the jumper switch (R side: internal ROM, O side: OSD ROM).

(3) Attach the adapter PCA7477G-100/PCA7477G-160 to the IC socket of the PROM programmer.

Programming into the internal ROM area (02000h--1FFFFh)

(4) Read the program into the addresses 02000h--1FFFFh of the PROM programmer.

(5) Using the PROM programmer's erase check function, check whether data can be written into the MCU's programming ROM area.

(6) Write the program into the programming ROM area of the MCU using the PROM programmer. (addresses 02000h--1FFFFh of the MCU)

(7) Verify the programming ROM area of the MCU using the PROM programmer to check whether the program has been written into the MCU correctly.

Programming into the OSD ROM area (20000h--227FFh)

(4) Read the program into the addresses 00000h--027FFh of the PROM programmer.

(5) Using the PROM programmer's erase check function, check whether data can be written into the MCU's programming ROM area.

(6) Write the program into the programming ROM area of the MCU using the PROM programmer. (addresses 20000h--227FFh of the MCU)

(7) Verify the programming ROM area of the MCU using the PROM programmer to check whether the program has been written into the MCU correctly.

Notes

* Some PROM programmers perform the steps (5) to (7) automatically.
* Be sure to set the programming area. Otherwise the mode's shift to the programming mode may not be performed successfully. The erase check function and others may not also be performed completely.

5.4 Precautions for Erasing Flash Memory

When you erase the flash memory, you need to fill in "00h" in the area to be erased in order to prevent an error (the recommended PROM programmers execute this automatically).

And also, when you erase the OSD ROM, you need to fill in "00h" in the ROM area reserved for testing (2F000h--2FFFFh) in order to prevent an error.

Always erase the ROM area reserved for testing when you erase the OSD ROM.

Chapter 5. Memory Maps

Figures 6.1 and 6.2 show memory maps of the M37760FFAGP-100/M37760FFAGP-160 and the PROM programmer.

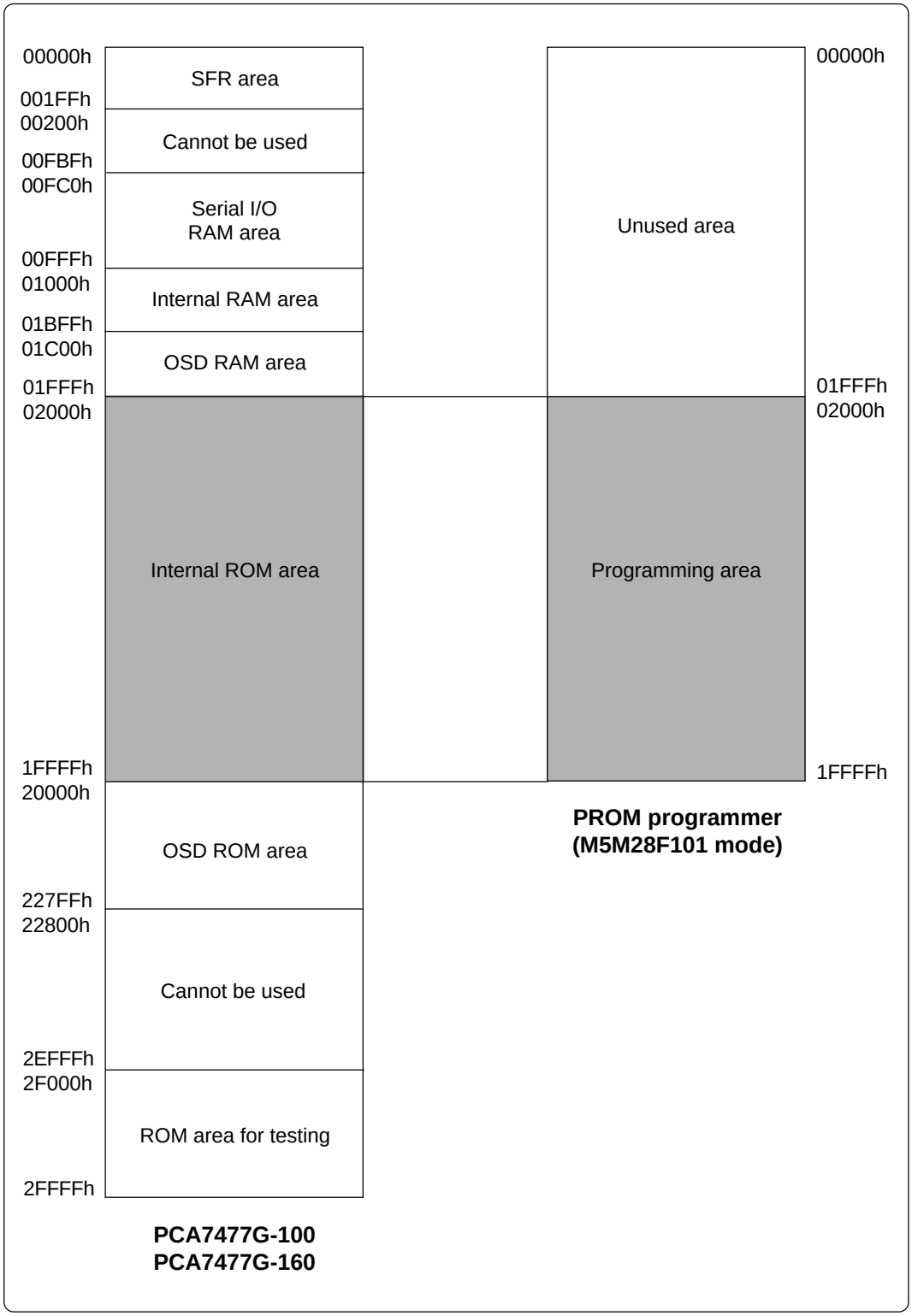

Figure 4.1 Memory map (writing into internal ROM)

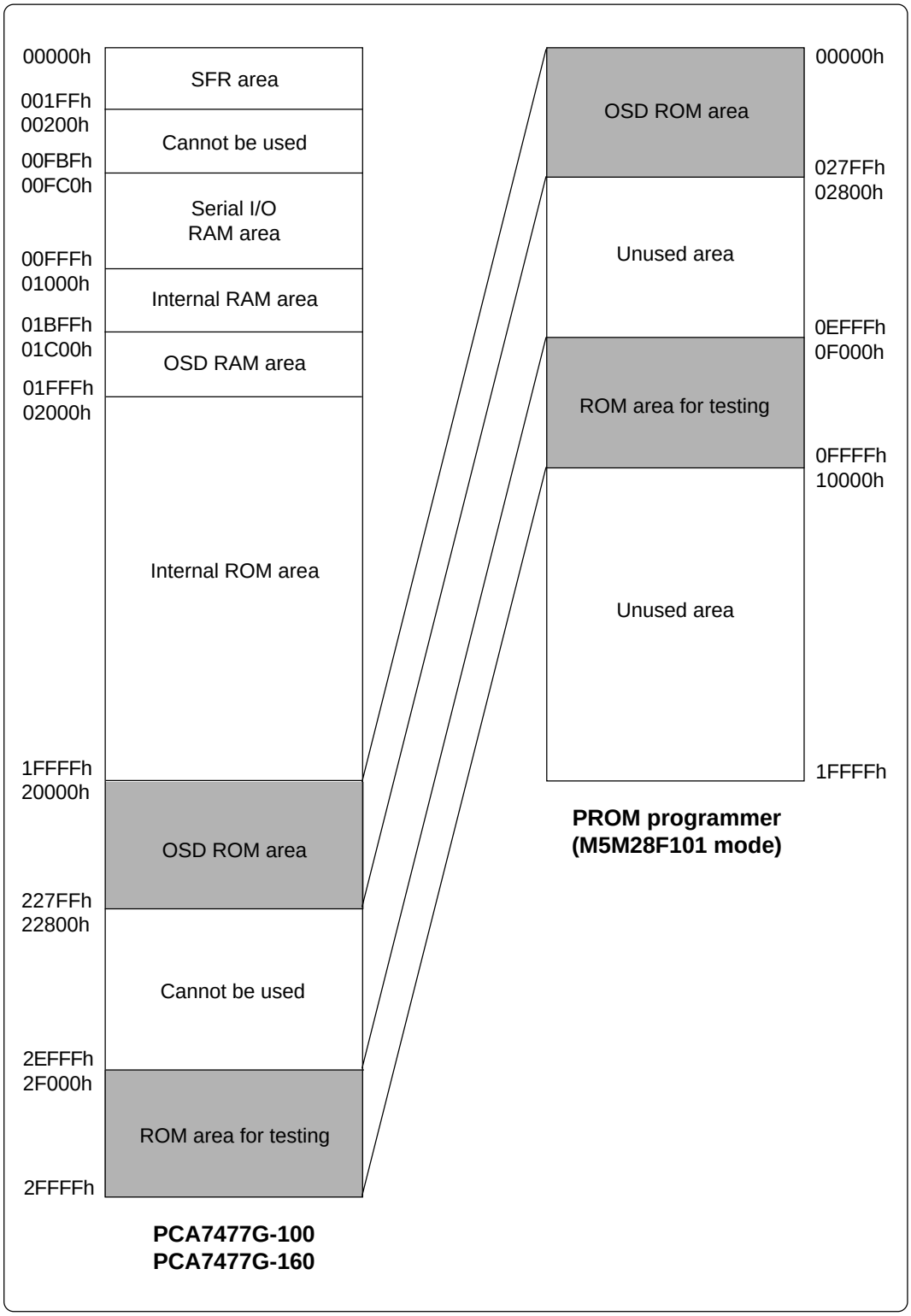

Figure 4.2 Memory map (writing into OSD ROM)

MEMO

PCA7477G-100/PCA7477G-160 User's Manual

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PCA7477G-100 PCA7477G-160
User's Manual

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